

Mineral Industry Surveys

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FLUORSPAR IN THE FOURTH QUARTER 2004

Reported fluorspar consumption in the fourth quarter was 148,000 metric tons (t), about an 11% decrease compared with the previous quarter and an 8% decrease compared with the figure for the fourth quarter of 2003. Consumption of fluorspar for hydrofluoric acid (HF) and aluminum fluoride was 124,000 t, a 15% decrease compared with the previous quarter and about 11% lower compared with the fourth quarter of 2003. Imports of fluorspar were 129,000 t, a decrease of nearly 10% compared with the previous quarter, and about 10% less than in the fourth quarter of 2003.

End of the year totals for 2004 revealed that reported fluorspar consumption increased by 56,000 t or 9% compared with 2003. This increase was entirely due to higher consumption levels for HF production. Fluorspar imports increased by about 6% and imports of HF increased by more than 15% compared with the previous year.

Defense Stockpile

There were no sales of fluorspar during the fourth quarter of 2004. The Defense National Stockpile Center (DNSC) had announced that it was planning to hold another fluorspar sale late in the first quarter of 2005, but the solicitation was cancelled on March 16 (Ringquist, 2005).

At the end of 2004, the DNSC reported that unsold stockpile material consisted of about 79,000 t of metallurgical grade and about 4,100 t of acid grade. Material committed for sale pending shipment totaled about 29,300 t of acid grade.

Industry News

China announced its planned 2005 export quota for fluorspar at 750,000 t. It offered 375,000 t in the first round of bidding for export licenses. As usual, it divided the offerings into two categories—"agreement" and "open" bidding. Quota volumes were 225,000 t for agreement bidding and 150,000 t for open bidding. The agreement bid prices averaged about \$27 per metric ton, and the open bid prices averaged about \$125 per metric ton. The weighted average of the two was about \$66 per metric ton. This large difference between the two classes of tenders may have unplanned consequences. It may encourage holders of agreement bid licenses to trade them instead of using

them, and the high open bid prices may lead to increased smuggling (O'Driscoll, 2005).

Tiberon Minerals Ltd. announced completion of a positive interim feasibility study for the Nui Phao tungsten-fluorspar project in Vietnam. The study indicated that the development would be economic. The new project plan forecasts production of about 220,000 metric tons per year (t/yr) of acid-grade fluorspar, about 4,300 t/yr of tungsten concentrate, and additional small tonnages of bismuth, copper, and gold. Projected operating costs for the operation remain low, but the capital cost of the project has risen to \$211 million compared with a prefeasibility study 2 years ago that put the forecast total at \$140 million. Tiberon management attributed the increase to a number of factors, including about \$25 million in compensation and resettlement costs (which were not in the original estimate), \$3.5 million for a dedicated bismuth recovery plant (not in the previous study), and a general rise in construction and fuel costs in the 2 years since the previous study. A final feasibility study is expected to be completed by the end of June 2005 (Mining Journal, 2005).

Tiberon also announced that the Government of Vietnam approved the environmental impact assessment (EIA) for the Nui Phao project. Approval of the EIA was required prior to applying for a mining license, which is the last major permit needed prior to mine development (Tiberon Minerals Ltd., 2005¹).

SC Mining Co. Ltd. is mining tungsten from the Doi Ngom deposit in Amphoe (district) Long, Changwat (province) Phrae in northern Thailand. The deposit is composed primarily of the tungsten ore ferberite (FeWO₄), but contains fluorite as an accessory mineral in the uppermost part of the orebody. In the past, this material has been regarded simply as overburden in the mining of the tungsten. Examination of the overburden over roughly one-third of the deposit's length established that this material contained a minimum of 400,000 t of fluorspar grading 50% CaF₂. The company is evaluating the potential of local markets for metallurgical-grade fluorspar. The company's

¹A reference that includes a section mark (§) is found in the Internet Reference Cited section.

current plan would include facilities to produce 5,000 t/yr of metallurgical grade for the local market and 3,000 t/yr of acid grade for export. Once a decision has been made to proceed, production of metallurgical grade could begin within a month, but production of acid grade would require construction of a flotation mill and the company would only consider such a venture with the involvement of a partner with experience in the fluorspar business (Industrial Minerals, 2005).

References Cited

Industrial Minerals, Thai fluorspar ready to go: Industrial Minerals, no. 449, February, p. 67.

Mining Journal, 2005, Nui Phao plan costs increase: Mining Journal, January 21, p. 11.
O'Driscoll, Mike, 2005, Bauxite chop & change: Industrial Minerals, no. 449, February, p. 6-7.
Ringquist, Frank, Stockpile cancels fluorspar solicitation DLA-Fluorspar-001: Defense National Stockpile Center news release, March 16, 1 p.

Internet Reference Cited

Tiberon Minerals Ltd., 2005, Tiberon receives approval of Nui Phao mine environmental impact assessment, accessed March 5, 2005, at URL <http://www.tiberon.com/pressreleases.html>.

TABLE 1
SALIENT FLUORSPAR STATISTICS¹

(Metric tons, unless otherwise specified)

	2003	2004				
	Fourth quarter	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Imports for consumption:	143,000	226,000	101,000	143,000	129,000	599,000
Average value per ton, c.i.f. U.S. port, acid grade	\$156	\$172	\$162	\$166	\$155	\$166
Average value per ton, c.i.f. U.S. port, metallurgical	\$85	\$83	\$75	\$81	\$83	\$82
Exports	7,100	6,800	5,100	4,670	4,050	20,600
End of quarter stocks, consumer	126,000	173,000	102,000	93,400	79,000	XX
Fluorspar equivalent of imported hydrofluoric acid	35,500	43,300	48,600	47,900	52,200	192,000
Fluorspar equivalent of imported cryolite	758	1,370	1,240	1,080	943	4,630
Quarterly reported fluorspar consumption	161,000	167,000	191,000	167,000	148,000	672,000

XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
CONSUMPTION OF FLUORSPAR BY END USE AND ASSAY RANGE¹
(DOMESTIC AND FOREIGN IN THE UNITED STATES)

(Metric tons)

End use or product	Third quarter 2004			Fourth quarter 2004			Year to date
	More than 97% calcium fluoride	Not more than 97% calcium fluoride	Total	More than 97% calcium fluoride	Not more than 97% calcium fluoride	Total	
Hydrofluoric acid and aluminum fluoride	146,000	--	146,000	124,000	--	124,000	586,000
Metallurgical	4,670	8,340	13,000	6,970	11,300	18,300	59,500
Other uses or products ²	7,510	--	7,510	4,900	--	4,900	26,300
Total	158,000	8,340	167,000	136,000	11,300	148,000	672,000
Stocks, end of quarter ³	72,100	21,300	93,400	63,300	15,700	79,000	XX

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes acid grade used in enamel, glass and fiberglass, steel castings, and welding rod coatings.

³Stocks data include distributor stocks (excluding National Defense Stockpile holdings) and consumer stocks for hydrofluoric acid and aluminum fluoride.

TABLE 3
IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID¹

	2003		2004									
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter		Year to date	
	Quantity (metric tons)	Value ³ (thousands)	Quantity (metric tons)	Value ³ (thousands)	Quantity (metric tons)	Value ³ (thousands)	Quantity (metric tons)	Value ³ (thousands)	Quantity (metric tons)	Value ³ (thousands)	Quantity (metric tons)	Value ³ (thousands)
Containing more than 97% calcium fluoride:												
China	94,900	\$15,700	171,000	\$31,100	23,500	\$4,430	104,000	\$18,200	31,800	\$5,380	330,000	\$59,200
France	42	14	--	--	--	--	44	16	22	8	66	24
Germany	--	--	--	--	19	9	--	--	--	--	19	9
Mexico	12,100	1,740	16,100	2,020	27,100	4,210	17,900	2,900	18,100	2,960	79,300	12,100
Mongolia	--	--	--	--	13,400	2,210	10,800	1,570	24,900	3,910	49,200	7,690
South Africa	28,000	3,580	21,000	2,640	28,300	4,180	6,000	707	32,100	4,380	87,400	11,900
United Kingdom	445	53	4	5	--	--	9	17	507	60	520	82
Total	135,000	21,100	208,000	35,800	92,400	15,000	138,000	23,400	108,000	16,700	546,000	91,000
Containing not more than 97% calcium fluoride:												
Canada	--	--	7	3	--	--	--	--	6	2	13	5
Mexico	7,390	629	18,200	1,520	6,350	511	4,840	392	21,700	1,800	51,100	4,220
Other	--	--	--	--	1,880	102	--	--	--	--	1,880	102
Total	7,390	629	18,300	1,520	8,230	613 [†]	4,840	392	21,700	1,800	53,000	4,330
Grand total	143,000	21,800	226,000	37,300	101,000	15,700	143,000	23,800	129,000	18,500	599,000	95,300

† Revised. -- Zero.

¹Imports for consumption include imports of immediate entry, and warehouse withdrawals.

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Cost, insurance, and freight at U.S. ports.

Source: U.S. Census Bureau.

TABLE 4
IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID¹

	2003		2004									
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter		Year to date	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Canada	7,360	\$8,050	9,780	\$11,700	11,900	\$12,400	13,200	\$13,700	10,700	\$11,000	45,500	\$48,700
China	429	247	116	89	514	319	261	198	59	55	950	661
Germany	65	124	64	120	45	88	61	139	91	193	261	540
Japan	250	608	347	816	214	530	420	1,000	391	961	1,370	3,310
Mexico	15,500	14,600	18,400	17,500	19,700	18,700	17,900	17,400	23,400	22,600	79,500	76,200
Other ³	61	176	99	298	119	345	67	165	128	314	413	1,120
Total	23,700	23,800	28,800	30,500	32,400	32,400	31,900	32,500	34,800	35,100	128,000	131,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Cost, insurance, and freight at U.S. ports.

³Includes India, Italy, the Republic of Korea, the Netherlands, Singapore, Spain, Switzerland, and Taiwan.

Source: U.S. Census Bureau.